PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : H04N 7/16, 7/10

A1

(11) International Publication Number: **WO 97/46016**

(43) International Publication Date: 4 December 1997 (04.12.97)

(21) International Application Number: PCT/US97/08833

(22) International Filing Date: 23 May 1997 (23.05.97)

(30) Priority Data:
08/654,997 29 May 1996 (29.05.96) US

(60) Parent Application or Grant
(63) Related by Continuation
US 08/654,997 (CON)
Filed on 29 May 1996 (29.05.96)

(71) Applicant *(for all designated States except US)*: STARSIGHT TELECAST INCORPORATED [US/US]; 3rd floor, 39650 Liberty Street, Fremont, CA 94538 (US).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: CASEMENT, Marcy [US/US]; 1217 Spencer Avenue, San Jose, CA 95125 (US). BURGESS, Andrew [US/US]; 115 Biddleford Court, San Jose, CA 95139 (US). FOLKER, David [US/US]; Apartment 362, 39505 Gallaudet Drive, Fremont, CA 94538 (US).

(74) Agents: WONG, Alice, L. et al.; Townsend and Townsend and Crew LLP, 8th floor, Two Embarcadero Center, San Fransisco, CA 94111-3834 (US).

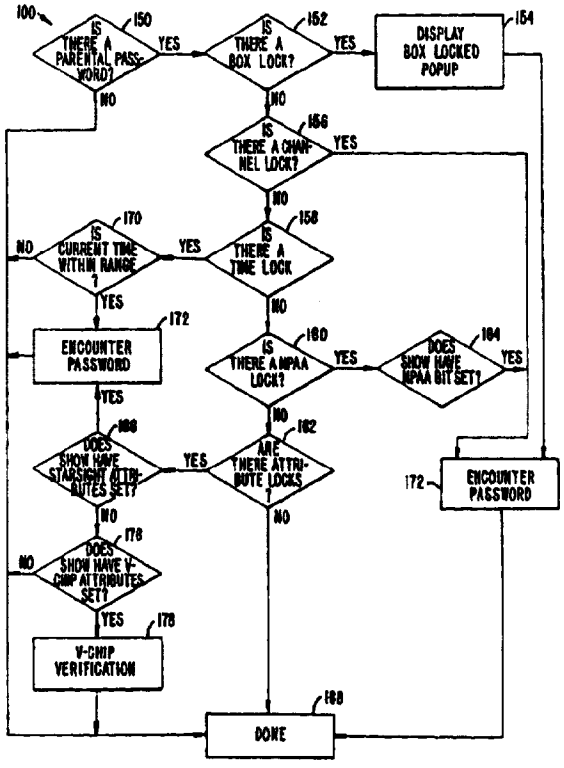
(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

Published
With international search report.
Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: TELEVISION SCHEDULE SYSTEM WITH ACCESS CONTROL

(57) Abstract

The present invention is directed to a television schedule system (1) with a user interface (38) which allows a user to control access to television programs by, time rating, content, and/or channel. Furthermore, the user may set a limit on pay-per-view (PPV) spending to limit the purchase of PPV programs.



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	**ES**	Spain	**LS**	Lesotho	**SI**	Slovenia
AM	Armenia	**FI**	Finland	**LT**	Lithuania	**SK**	Slovakia
AT	Austria	**FR**	France	**LU**	Luxembourg	**SN**	Senegal
AU	Australia	**GA**	Gabon	**LV**	Latvia	**SZ**	Swaziland
AZ	Azerbaijan	**GB**	United Kingdom	**MC**	Monaco	**TD**	Chad
BA	Bosnia and Herzegovina	**GE**	Georgia	**MD**	Republic of Moldova	**TG**	Togo
BB	Barbados	**GH**	Ghana	**MG**	Madagascar	**TJ**	Tajikistan
BE	Belgium	**GN**	Guinea	**MK**	The former Yugoslav Republic of Macedonia	**TM**	Turkmenistan
BF	Burkina Faso	**GR**	Greece			**TR**	Turkey
BG	Bulgaria	**HU**	Hungary	**ML**	Mali	**TT**	Trinidad and Tobago
BJ	Benin	**IE**	Ireland	**MN**	Mongolia	**UA**	Ukraine
BR	Brazil	**IL**	Israel	**MR**	Mauritania	**UG**	Uganda
BY	Belarus	**IS**	Iceland	**MW**	Malawi	**US**	United States of America
CA	Canada	**IT**	Italy	**MX**	Mexico	**UZ**	Uzbekistan
CF	Central African Republic	**JP**	Japan	**NE**	Niger	**VN**	Viet Nam
CG	Congo	**KE**	Kenya	**NL**	Netherlands	**YU**	Yugoslavia
CH	Switzerland	**KG**	Kyrgyzstan	**NO**	Norway	**ZW**	Zimbabwe
CI	Côte d'Ivoire	**KP**	Democratic People's Republic of Korea	**NZ**	New Zealand		
CM	Cameroon			**PL**	Poland		
CN	China	**KR**	Republic of Korea	**PT**	Portugal		
CU	Cuba	**KZ**	Kazakstan	**RO**	Romania		
CZ	Czech Republic	**LC**	Saint Lucia	**RU**	Russian Federation		
DE	Germany	**LI**	Liechtenstein	**SD**	Sudan		
DK	Denmark	**LK**	Sri Lanka	**SE**	Sweden		
EE	Estonia	**LR**	Liberia	**SG**	Singapore		

TELEVISION SCHEDULE SYSTEM WITH ACCESS CONTROL

BACKGROUND OF THE INVENTION

The present invention relates to a system for providing television schedule information, and more particularly to a television schedule information guide with capability for controlling access to television programs.

Systems are available for providing television schedule information to a user. For example, U.S. Patent No. B1 4,706,121 (Young), provides a television schedule system and process. In one embodiment of Young, the television schedule information is provided on the user's television screen. The user may supply selection criteria which are utilized by the Young system to make program selections, and the like. In addition, Young discloses a system which controls a television receiver to allow for automatic selection of programs and the automatic, unattended recording of programs that are listed in the television schedule information guide. The automatic, unattended recording of programs is achieved by controlling a videotape recorder (VCR) or other recording device.

SUMMARY OF THE INVENTION

The present invention is directed to a television schedule system with a user interface that allows a user to control access to television programs by time, rating, content, and/or channel. Furthermore, the user may set a limit on pay-per-view (PPV) spending to limit the purchase of PPV programs.

In a preferred embodiment, the television schedule system has a main menu. A user may select the "Parental Control" (parental control) menu from the main menu to enter the parental password. The parental password may be established from the main menu. After establishing and entering the parental password, the user may lock-out programs by channel, by rating, content, and/or by time from the parental control menu. The content description of the show may further have a corresponding "V-chip" classification based on V-chip rating data supplied by the FCC. Hence, the user may further lock out programs by V-chip

classification. In order to tune to a locked program, the parental password is preferably supplied.

In one embodiment, the user may select a "control viewing" menu from the main menu to enter a purchase password. The purchase password may also be established from the main menu. After establishing and entering the purchase password, the user may specify a PPV spending limit thereby limiting the purchase of PPV programs. The user may further specify the type of PPV programs allowed based on rating and content. In order to purchase beyond the spending limit, the purchase password is preferably supplied. In order to purchase restricted programs, both the parental and purchase passwords are preferably supplied.

If the user does not remember a password, the user may, for example, call the cable operator. The cable operator may set the password to null so the user may establish a new password.

Other features and advantages of the present invention will become apparent to those skilled in the art upon a perusal of the remaining portions of the specification and drawings. In the drawings, like reference numerals indicate identical or functionally similar elements.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 illustrates a preferred embodiment of a television system according to the present invention;

Fig. 2A shows a preferred embodiment of a pop-up menu shown to a user if a password has not been established, and the user selects parental control from the main menu of a television schedule guide;

Fig. 2B shows a preferred embodiment of a parental control menu shown to a user after a parental password has been established and entered;

Fig. 2C shows a preferred embodiment of a pop-up shown when the user selects a "lock by channel" feature;

Fig. 2D shows a preferred embodiment of a pop-up shown when the user selects a "lock by rating and content" feature;

Fig. 2E shows a preferred embodiment of a pop-up shown when the user selects a "lock by time" feature;

Fig. 2F shows a preferred embodiment of a pop-up shown to a user if a purchase password has not been established, and the user selects a "Set IPPV Spending limits" feature from the control viewing menu;

Fig. 2G shows a preferred embodiment of a pop-up shown to a user if a purchase password has been established, and the user selects the "Set IPPV Spending limits" feature from the control viewing menu;

Fig. 2H shows a preferred embodiment of a IPPV spending limit pop-up shown to a user after a proper purchase password has been established and entered;

Fig. 3 is a process flow chart for determining whether a user could tune to a program;

Fig. 4 ia a process flow chart for the operation of the parental control feature;

Fig. 5 is a process flow chart for the operation of the purchase control feature;

Fig. 6 is a process flow chart for verifying a password and limiting a user's number of tries in entering the parental control or purchase password;

Fig. 7 is a process flow chart for determining whether a program has a restricted V-chip classification, and whether access should be allowed;

Fig. 8 is a process flow chart for changing the parental control or purchase password;

Fig. 9 is a process flow chart for establishing the parental control or purchase password; and

Fig. 10 is a process flow chart for removing the parental control or purchase password.

DESCRIPTION OF PREFERRED EMBODIMENTS

The present invention provides a television (TV) schedule system with capability for controlling access to TV programs. Fig. 1 illustrates a preferred embodiment of TV system 1 in which the invention may be utilized. As shown, system 1 includes a distribution center 10 and multiple receiving locations. Distribution center 10 compiles data for a data-stream. In a preferred embodiment, this data-stream is broadcast to receiving locations 16, 18, 20, and 22. Several methods are available for broadcasting the data-stream from distribution center 10 to

receiving locations 16-22. For example, satellite 15 may broadcast this data-stream within the vertical blanking interval (VBI) of a television channel (e.g., PBS) or a dedicated channel to receiving locations 16, 18, 20, and 22. Alternatively, the data may be broadcast out of band, i.e., using non channel specific mechanisms. In another embodiment, the data-stream is provided to receiving locations 16, 18, 20, and 22 via transmission line 13. Transmission line 13 may be, for example, optical fiber, coax cable, telephone line, or the like. In yet another embodiment, peripheral devices, which are located within the receiving locations, receive the data-stream from, for example, a local service provider 40. Service provider 40 receives the data-stream from distribution center 10 via line 17, and broadcasts the data-stream to the receiving peripheral devices via satellite 15 (or another satellite), or via lines 19 and 13. The receiving peripheral devices may be televisions 30, televisions 34, VCRs 32, VCRs 36, and/or set-top boxes 38. In still further embodiments, PCTVs may be utilized, or the data-stream may be provided to a personal computer for use with the computer and/or more of the above devices.

In the preferred embodiment, information in the data-stream includes TV schedule information. Software located within the peripheral devices utilize the schedule information provided in the data-stream to generate a TV schedule guide. The software is stored on a computer-readable storage medium 42 such as a ROM, RAM, disk, or other storage device. If the TV schedule guide is in a grid format, for example, the available channels may be listed on the "y" axis and various times may be listed on the "x" axis. The user may tune to a program within the TV schedule guide by highlighting the program within the guide, and selecting the program. The user may also select one or more desired programs which are listed in the TV schedule guide for automatic, unattended recording. For more information on how the TV schedule system displays information, and its tuning and automatic recording capabilities, see U.S. Patent No. B1 4,706,121 and U.S. Patent No. 5,151,789. Both these patents, like the present patent application, are assigned to StarSight Telecast, Inc., and are hereby incorporated by reference in their entirety for all purposes.

The system further has the capability of preventing viewers from tuning to or viewing one or more TV programs. TV programs may be blocked by channel, rating, content, and/or time. If the user turns on the TV during a locked time, or

tunes to a channel with a show that contains the locked rating or content/V-chip classification (for example), the television schedule system mutes the audio and displays a solid blue screen over the TV screen. A pop-up will appear asking for the parental password. The solid blue screen will disappear, and mute will be disabled when the correct password is entered.

Fig. 2A shows a preferred embodiment of pop-up 52 shown to a user if a password has not been established, and the user selects parental control from main menu 50. The various menus and pop-ups of the system may be shown as partial screens overlaying underlying full screens, or they may be shown as full screens. As shown, the user is asked to create a parental password by pressing a SELECT key. The SELECT key may also be the ENTER key, and may be on a user input device, or it may be located on the TV schedule guide and entered by directing a cursor to a screen button. If the SELECT key is on the TV schedule guide, a user may highlight it on the guide and input it by pressing an enter key, or any key that functions as an enter key on the user input device. Other keys that may be located on the user input device or the TV schedule guide include the CANCEL key, the REC key, and the EXIT key. Up, down, left and right arrow keys are preferably included to allow a user to navigate and make selections within the pop-up menus. However, any key combinations which allow a user to navigate within the pop-up menus may be used. The parental password may be established from main menu 50 by striking the SELECT key.

Fig. 2B shows a preferred embodiment of parental control menu 54 shown to a user when a parental password has been established, from main menu 50, and the user has entered the correct password. The user may lock TV programs by channel, by rating and/or content, or by time. If the user desires, for example, to lock by time, the user may move the cursor to the "Lock by Time" location and inputs the SELECT key. Alternatively, if programs have been locked, the user may unlock all programs that have been locked.

Fig. 2C is a preferred embodiment of pop-up 56 shown when the user selects the "lock by channel feature." In the preferred embodiment, pop-up 56 includes a list of all channels available to the user. If the user has more channels than will fit in pop-up 56, indicators or scroll bars will be shown at corners of the pop-up instructing the user to move further right or further down to display more

channels. The user may use the previously mentioned arrow keys to navigate within pop-up 56. A channel is locked after a user highlights and selects the channel. A lock symbol will be placed next to the channel icon to indicate that the channel is locked. To unlock a channel, the user may highlight and select the locked channel. The lock symbol next to the channel icon will then disappear to indicate the lock is removed. The user may use the EXIT key to return to pop-up 54 of the parental control menu.

Since the system stores program information, it is able to determine whether a current or future program is shown on a restricted channel. The system may also determine whether a program falls within a restricted rating and/or content, V-chip classification, or time period. Hence, if a lock is placed on a channel on which there are programs scheduled for recording, a pop-up will appear warning the user of the conflict. If the user ignores the pop-up, it will time out in three seconds, the channel will be locked, and the recording will occur without the need for a password as it was set before the lock was enabled. Once a channel is locked, a user may not tune to, record, or purchase any program on that channel unless the user enters the correct password. However, upon entering the correct password, the user may schedule recording of future programs. At the time of the scheduled recording, the system unlocks the locked channel, tunes to the channel, and records the program. When the program is over, the system relocks the channel.

Fig. 2D is a preferred embodiment of pop-up 60 shown when the user elects to lock programs by rating and/or content. As can be seen, two lists are shown to the user, one by rating, and one by content. The user may lock by content and/or rating by highlighting the relevant content and/or rating on the pop-up and inputting the SELECT key. Programs may be locked using more than one category of rating and/or content. Furthermore, the content description on pop-up 60 may include information corresponding to data supplied by the V-chip. The V-chip data may be enclosed within parenthesis and will indicate the V-chip attribute classification of the program. For example, the content category "Violence" may have corresponding V-chip attribute mildly violent (V2), moderately violent (V3), and the like. When the user locks shows according to rating, all higher ratings are

automatically locked. Since the show contents are not listed in order of severity, locking one content does not automatically lock any others.

The user may also lock specified time periods to prevent TV viewing during those times. The user may further specify the frequency of the lock, e.g., for a single day, for Monday through Friday only, weekends only, or for every day of the week. Fig. 2E shows pop-up 62, which requests user input for the time period during which TV viewing should be prevented. As shown, the user may specify the time to begin locking (the default time is 2:30pm), the time to end locking (the default time is 5pm), and the frequency of the lock (the default frequency is for a single day). In the situation where the user has set these values before, the system remembers the values and displays them when pop-up 62 is shown.

If TV viewing is attempted during a locked period, the system will mute the audio, and display a blue screen over video. A pop-up will appear asking for the parental password. When the correct password is entered, the solid blue screen will disappear, and audio will be re-enabled. If a lock is placed on a time period during which there are programs scheduled for recording, a pop-up will appear warning the user of the conflict. If the user ignores the pop-up, it will time out in three seconds, the channel will be locked, and the recording will occur without the requirement of a password as it was set before the lock was enabled. However, all future recordings scheduled during the locked period will require a password.

Fig. 2F shows a preferred embodiment of pop-up 64 shown to a user if a purchase password has not been established, and the user selects the "Set IPPV Spending limits" feature from control viewing menu 66. IPPV stands for impulse pay-per-view, and refers to PPV programs which are purchased via a user input device, for example, a remote control. It is different from traditional PPV programs which require the user to call the program provider on a phone to purchase the program. The user may establish the purchase password, from main menu 50, by inputting the SELECT key either by pressing the key on the user input device, or selecting it on the TV schedule guide. Fig. 2G shows a preferred embodiment of pop-up 68 shown to a user if a purchase password has been established, and the user selects the "Set IPPV Spending limits" feature from control viewing menu 66. In this case, the user would simply enter the purchase password

and input the SELECT key. As shown in Fig. 2G, if the user made a mistake, the user may input the CANCEL key and re-enter the password.

Once the purchase password has been established and entered, the user will see IPPV spending limit pop-up 70 (as shown in Fig. 2H), and the user may enter the total dollar amount to which IPPV spending should be limited before the system requires a password to enable purchasing. The default spending amount is zero, in which case, the user needs to enter the purchase password for all purchases. Where a dollar amount greater than zero is set, this is the amount the user may spend before the purchase password is required to make additional purchases. To set the amount, the user may input the right arrow key, and with each input of the right arrow key, a dollar would be added to the limit. To decrease the amount, the user may use the left arrow key. The user may use the arrow keys to reset the dollar amount whenever desired.

To access a locked program, the user may select the "Unlock All Locks" feature from parental control menu 54, and all locked programs will be unlocked. Alternatively, the user may unlock all locks from the television schedule information guide by inputting the SELECT key for about 1 second while within the guide. A pop-up will appear, and the user may choose the "Unlock All" option. The system will ask the user for the parental password, and upon entering the correct password, the user may tune to all programs on all the available channels. While the programs are unlocked, the "Unlock All Locks" feature toggles and becomes the "Relock All Locks" feature and the gray lock symbols in the guides become red unlocked lock symbols. The user may relock all the previously locked programs by selecting "Relock All Locks" from parental control menu 54. Turning off the TV will also automatically restore all parental locks.

Alternatively, the user may unlock individual programs by tuning directly to the programs from either the TV or the TV schedule guide, and entering the correct password. If the user tunes to a locked channel, the system displays a blue screen over the TV screen, and mutes the audio. A pop-up will appear requesting the parental password. If the correct password is supplied, the system removes the blue screen and restores the audio. However, in this case, when the user tunes off a previously locked channel, the parental lock will be automatically restored.

Hence, if the user tunes off the locked channel, and then tunes back, the user must re-enter the password to view the locked channel.

To access individual locked programs from the guide, the user may select whichever locked program the user wishes to view by highlighting it on the guide, and inputting the SELECT key. A password pop-up will appear. If the user enters the correct password, the system tunes to the channel with the desired program. The user may also input the SELECT key for more than 1 second, and a pop-up will appear asking the user whether to tune to or record the locked program. When the user has made a selection, the password pop-up will appear and the user may enter the password. After the correct password has been entered, the system will either tune to or record the locked program. Instead of inputting the SELECT key and selecting the record option on the pop-up, the user may also highlight a locked program and input the REC key to request recording of the program. Recording will proceed when the user has supplied the correct password.

Fig. 3 illustrates a process flow chart for determining whether a user could tune to a program. In preferred embodiments, the various processes described herein operate under software control, such software being stored on a computer readable storage medium. In a preferred embodiment, the system has checked whether a parental password is necessary at step 100. At step 102 the system determines whether the user has supplied the correct parental password. If the correct parental password has been entered, the process will check whether the program is a free event at step 104. A free event is a non pay-per-view event. If the event is free, the system will tune to the program at step 110. If the event is not free, the system will request that the user enter the purchase password at step 106. At step 108, the password entered is verified. If the password is correct, the system will tune to the program at step 110. For both verifying steps 102 and 108, if incorrect passwords are supplied, the system will not tune to the program requested.

Fig. 4 illustrates a process flow chart for the operation of the parental control feature. When a user turns on the TV, or tunes to a program or channel, the system checks at step 150 whether a parental password is needed before the program(s) will be shown. If a parental password exists, a step 152 of the system checks whether a BOX lock has been set. A BOX lock is essentially a special

TIME lock as it keeps the TV locked for 24 hours a day, everyday. If a BOX lock exists, a step 154 displays a pop-up informing the viewer that a password is necessary before the viewer may watch TV, and a step 172 requests that the user enters the parental password. When the user supplies the correct password, the user may tune to the program, schedule an auto-tune, or schedule a recording of the program at step 168.

If a BOX lock has not been set, the system checks for channel locks at step 156. If none exists, a step 158 checks for a TIME lock. If a TIME lock exists, a step 170 checks whether the current time is within the range of the restricted times. The user is asked to supply the parental password at step 172 if the user is trying to watch TV at a restricted time. Similarly, if a channel lock exists, and the user is trying to tune to a locked channel, the user would be asked to supply the password at step 172. If the user is watching TV at an unrestricted time, the user may proceed to step 168 and may tune to the program, record the program and the like.

If no TIME lock has been set, a step 160 checks for a rating/MPAA lock, as the ratings correspond to those set by Motion Pictures of America Association. If a rating lock has been set, a step 164 determines whether the program has a restricted rating. If so, the user is asked to supply the parental password at step 172. On the other hand, if there is no rating lock, a step 162 checks for a content/ATTRIBUTE lock. The system checks at step 166 whether the program contains restricted content, and if so, the user is asked to supply the parental password at step 172. A step 176 further checks whether the program has a V-chip classification if the program does not contain restricted content. If so, a step 178 (details shown in Fig. 7) determines whether the user is trying to gain access to a program with restricted V-chip classifications.

Fig. 5, which describes step 106 in greater detail, illustrates a process flow chart for the operation of the purchase control feature. When a user tunes to a program, a step 200 checks whether a purchase password has been established. If so, a step 204 checks whether the limit has been exceeded. Step 172 requests for the purchase password if the limit has been exceeded; if not, the system proceeds with the buying process at step 208. If step 200 determines that a purchase

password has not been established, the system will also proceed with the buying process at step 208.

Fig. 6, which describes step 172 in greater detail, illustrates a process flow chart for verifying a password and limiting a user's number of tries in entering the purchase or parental password. At step 250, the user is asked to supply the applicable password. A step 252 receives the user's input, and a step 254 checks whether the password is in a proper format. If the password is improper, for e.g., it has too many characters, a step 256 displays a message informing the user the password is illegal. Step 252 is repeated, and the user may re-enter a proper password. As shown, the user may re-enter the password an infinite number of times if the password is rejected as being improper.

Once the user has entered a proper password, a step 258 verifies that the password entered is correct. If so, a step 260 allows the user access to the locked program. However, when the password entered is incorrect, a step 262 tracks the number of times the user attempts to enter an incorrect password. A step 264 compares the count at 262 with the number 3. If the count at 262 is less than 3, a step 256 displays the illegal password pop-up and the user may re-enter the password at step 252. If the user has attempted to enter a correct password more than three times, a step 266 shows a pop-up informing the user there has been too many attempts to enter the password, and the user has to wait fifteen minutes before attempting to enter the password again. Steps 268 and 270 set the Flag, and start the fifteen minute restriction before allowing the user to re-enter a password.

In a preferred embodiment, disconnecting the system from the power supply will not circumvent the fifteen minute restriction; instead, the user will have to wait longer to re-enter the password as the system resets the fifteen minute period when it is re-connected to the power supply. The system restricts the user to three attempts at entering the correct password to ensure the security of the password. Since an unauthorized user will preferably have to wait at least 15 minutes after every three tries, the unauthorized user is not as likely to crack the password.

Fig. 7, which describes step 178 in greater detail, illustrates a process flow chart for determining whether a program has restricted V-chip classification, and whether the user should be allowed access. Since V-chip data comes from the video stream of a channel, one way to determine whether a program has restricted

V-chip classification is to first tune to the channel to access the data. For example, the user may be watching channel 9, and desires to tune to channel 3. Referring to Fig. 7, if the system determines that the program on channel 3 has V-chip classification, a step 300 saves the video and audio volume information of channel 9. The system determines at step 302 whether the user is changing channels from the TV screen or from within guide. If the user is changing channels from the TV screen, a step 304 puts a blue screen over the TV screen.

Alternatively, where the user is changing channels from within the guide, a step 306 applies a blue border around the guide to block out parts of the screen that are not covered by the guide. At step 308, the system mutes the audio so the user may not hear the program. A step 310 tunes to the requested channel, which is channel 3 in this example, and a step 312 reads the V-chip data from the video stream of the channel. A step 314 determines whether the V-chip classification is a restricted classification. If not, the user may tune to the program on channel 3. However if the program has a restricted V-chip classification, the user is asked to supply the parental password at step 172. A step 316 checks that the user has supplied the correct parental password, if so, a step 318 restores the audio volume of the channel (in this case, channel 3). Depending on whether the user was changing channels while within the TV screen or the guide, either step 324 will remove the blue screen put on by step 304, or a step 322 will clear the guide and the blue border applied by step 306. If access was not verified at step 316, audio remains muted, and the blue screen or the blue border and the guide remains on the screen. The user may, however, attempt to access other channels/programs, which will be shown if they are unrestricted.

In another embodiment, the system need not first tune to the channel to access V-chip data. Since V-chip rating data may be included in the data stream, and received in a similar manner as data regarding program title, description, and the like, the system may receive the V-chip rating data in advance, and store the data in a database. In this embodiment, the system may apply parental control without having to first tune to the channel to access V-chip data, as the system may simply retrieve the data from the database. Referring to the Fig. 7 example, the system may determine, while the user is still within channel 9, whether the program on channel 3 has V-chip classification by retrieving V-chip data information

regarding the channel 3 program from the database. After retrieving this information, if the program has V-chip classification, the system may determine whether the V-chip classification is a restricted classification. If so, the parental password is requested, if not, the system tunes to the channel 3 program. Hence, this embodiment eliminates the need for the system to mute the audio and put up a blue screen or a blue border around the guide, as the system need not first tune to the channel.

Fig. 8 illustrates a process flow chart for changing the parental control or purchase password. A step 350 requests for the password, and a step 352 receives the user password input. A step 354 checks whether the password is in proper form, if not, a step 356 displays an illegal password pop-up, and the user has an unlimited number of times to re-enter a proper password at step 352. When the password entered is in proper form, a step 358 verifies that the password is in fact the correct password. A step 360 keeps count of the number of times an incorrect password is entered. As shown by steps 360 and 362, the user is given three attempts to enter a correct password. If after three attempts, the password entered is still incorrect, a step 364 displays a "Too Many Attempts" pop-up. The user has to wait fifteen minutes before the system will allow any further password input attempts, as steps 366 and 368 set the flag and start the fifteen minute restriction. As mentioned, the user preferably may not circumvent the fifteen minute wait by disconnecting the system from the power supply.

The user is allowed to change the old password and enter a new password at step 370 if the user supplied the correct password at step 352. A step 372 ensures that the new password is in proper form, if not, a step 374 displays an illegal password pop-up, and the user has an unlimited number of times to re-enter a proper new password at step 370. If the new password entered is in proper form, the user is requested to re-enter the new password at step 376 to confirm the new password entered is indeed the password desired. At step 378, the system compares the password entered at step 370 with the password entered at step 376. If the two passwords are different, the user is asked to re-enter the new password again at step 376 to confirm the new password entered is the password desired, and step 378 again compares the passwords entered.

Steps 376 and 378 are repeated until the password entered at step 376 matches the password entered at step 370. Or, the user may exit the process, in which case, the password is unchanged. Alternatively, after step 378 made its comparison, if password 370 is different from password 376, steps 370-378 are repeated. This means that the user may re-enter the new password at step 370 to ensure that the entry at step 370 is correct, and reconfirm the password at step 376. Step 378 will compare the two passwords, if they are the same, a step 380 changes the old password to the new password.

Fig. 9 illustrates a process flow chart for establishing the parental control or purchase password. A step 400 requests for the password, and a step 402 receives the user password input. At step 404, the system checks whether the password is in proper form, if not, a step 406 displays an illegal password pop-up, and the user has an unlimited number of times to re-enter a proper password at step 402. If the password entered is in proper form, the user is requested to re-enter the password at step 408 to confirm the password entered is indeed the password desired. A step 410 compares the password entered at step 402 with the password entered at step 408. If the two passwords are different, the user is asked to re-enter the password again at step 408 to confirm the password entered is the password desired, and step 410 again compares the passwords entered.

Steps 408 and 410 are repeated until the password entered at step 408 matches the password entered at step 402. Or, the user may exit the process, in which case, a password is not created. Alternatively, after step 410 made its comparison, if password 402 is different from password 408, steps 402-410 are repeated. This means that the user may re-enter the password at step 402 to ensure that the entry at step 402 is correct, and re-confirm the password at step 408. A step 410 will compare the two passwords. If they are the same, a step 412 establishes the password as the current password.

Fig. 10 illustrates a process flow chart for removing the parental control or purchase password. At step 450, the system displays a pop-up explaining to the user that all programs may be viewed free of restrictions if the user removes the password and asks whether the user wishes to proceed. If the user decides to proceed at step 452, a step 454 requests that the user enters the password. If not, the user exits the process. A step 456 receives the user input if the user decides to

proceed. and a step 458 checks whether the password is in proper form. If not, a step 460 displays an illegal password pop-up, and the user has an unlimited number of times to re-enter a proper password at step 456. If the password entered is in proper form, a step 462 verifies that the password is in fact the correct password. A step 464 keeps count of the number of times an incorrect password is entered.

As shown by steps 466, 460 and 456, the user is given three attempts to enter a correct password. After three attempts, if the password entered is still incorrect, step 468 displays a "Too Many Attempts" pop-up. The user has to wait fifteen minutes before the system will allow any further password input attempts, as steps 470 and 472 set the flag and start the fifteen minute restriction. As mentioned, the user preferably may not circumvent the fifteen minute wait by disconnecting the system from the power supply. The user is allowed to remove the password at step 474 if the user supplied the correct password at step 462.

The above description is illustrative and not restrictive. Variations of the invention will become apparent to those skilled in the art upon review of this disclosure. The scope of the invention should, therefore, be determined not with reference to the above description, but instead should be determined with reference to the appended claims along with their full scope of equivalents.

WHAT IS CLAIMED IS:

1. A method of operating a television guide comprising the steps of:

inputting television program schedule information, said schedule information comprising at least television program information and times; and

limiting access to selected ones of said television programs based on user inputs and said program information.

2. The method as recited in claim 1 wherein said step of limiting access comprises the step of limiting access by rating.

3. The method as recited in claim 2 wherein all programs with a rating worse than said rating are blocked.

4. The method as recited in claim 1 wherein said step of limiting access comprises the step of limiting access by content.

5. The method as recited in claim 1 wherein said step of limiting access comprises the step of limiting access by V-chip classification.

6. The method as recited in claim 1 wherein said step of limiting access comprises the step of limiting access by time.

7. The method as recited in claim 1 wherein said step of limiting access comprises the step of limiting access by a spending limit for pay-per-view programs.

8. The method as recited in claim 1 wherein said step of limiting access comprises the step of limiting access by rating for a pay-per-view program.

9. The method as recited in claim 1 wherein said step of limiting access comprises the step of requiring a password to be input before allowing access to said selected ones of said television programs.

10. The method as recited in claim 1 wherein said schedule information is broadcast in a vertical blanking interval.

11. The method as recited in claim 1 wherein said schedule information is broadcast on a dedicated channel.

12. The method as recited in claim 1 wherein said schedule information is broadcast out-of-band, using non-channel specific mechanisms.

13. The method as recited in claim 1 wherein said step of limiting access comprises the step of displaying a solid color screen and blocking audio of one of said selected programs.

14. A computer program product comprising:

computer readable code that inputs television program schedule information, said schedule information comprising at least television program information and times;

computer readable code that limits access to selected ones of said television programs based on user inputs and said program information; and

tangible media that stores the computer readable codes.

15. The computer program product as recited in claim 14, wherein said computer readable code limits access by rating.

16. The computer program product as recited in claim 15, wherein said computer readable code limits access to all programs with a rating worse than said rating.

17. The computer program product as recited in claim 14, wherein said computer readable code limits access by content.

18. The computer program product as recited in claim 14, wherein said computer readable code limits access by V-chip classification.

19. The computer program product as recited in claim 14, wherein said computer readable code limits access by time.

20. The computer program product as recited in claim 14, wherein said computer readable code limits access by a spending limit for pay-per-view programs.

21. The computer program product as recited in claim 14, wherein said computer readable code limits access by rating for a pay-per-view program.

22. The computer program product as recited in claim 14, wherein said computer readable code limits access to said selected ones of said television programs by requiring input of a password before allowing access to said selected ones of said television programs.

23. The computer program product as recited in claim 14 wherein said schedule information is broadcast in a vertical blanking interval.

24. The computer program product as recited in claim 14 wherein said schedule information is broadcast on a dedicated channel.

25. The computer program product as recited in claim 14 wherein said schedule information is broadcast out-of-band, using non-channel specific mechanisms.

26. The computer program product as recited in claim 14, wherein said computer readable code limits access by displaying a solid color screen and blocking audio of one of said selected programs.

27. A method of operating a television comprising the steps of:

storing schedule guide information and associated program quality information for programs in said schedule guide;

inputting a password to restrict access to programs with selected qualities;

receiving user input to tune to a particular program;

determining if said particular program has said selected qualities; and

not allowing display of said program if said program has said selected qualities.

28. The method as recited in claim 27 wherein a selected quality is a price quality.

29. The method as recited in claim 27 further comprising the step of receiving said password and user input to unlock all channels; and

unlocking all channels for a limited time.

30. The method as recited in claim 27 wherein said step of storing program quality information comprises a step of retrieving V-chip information for a program.

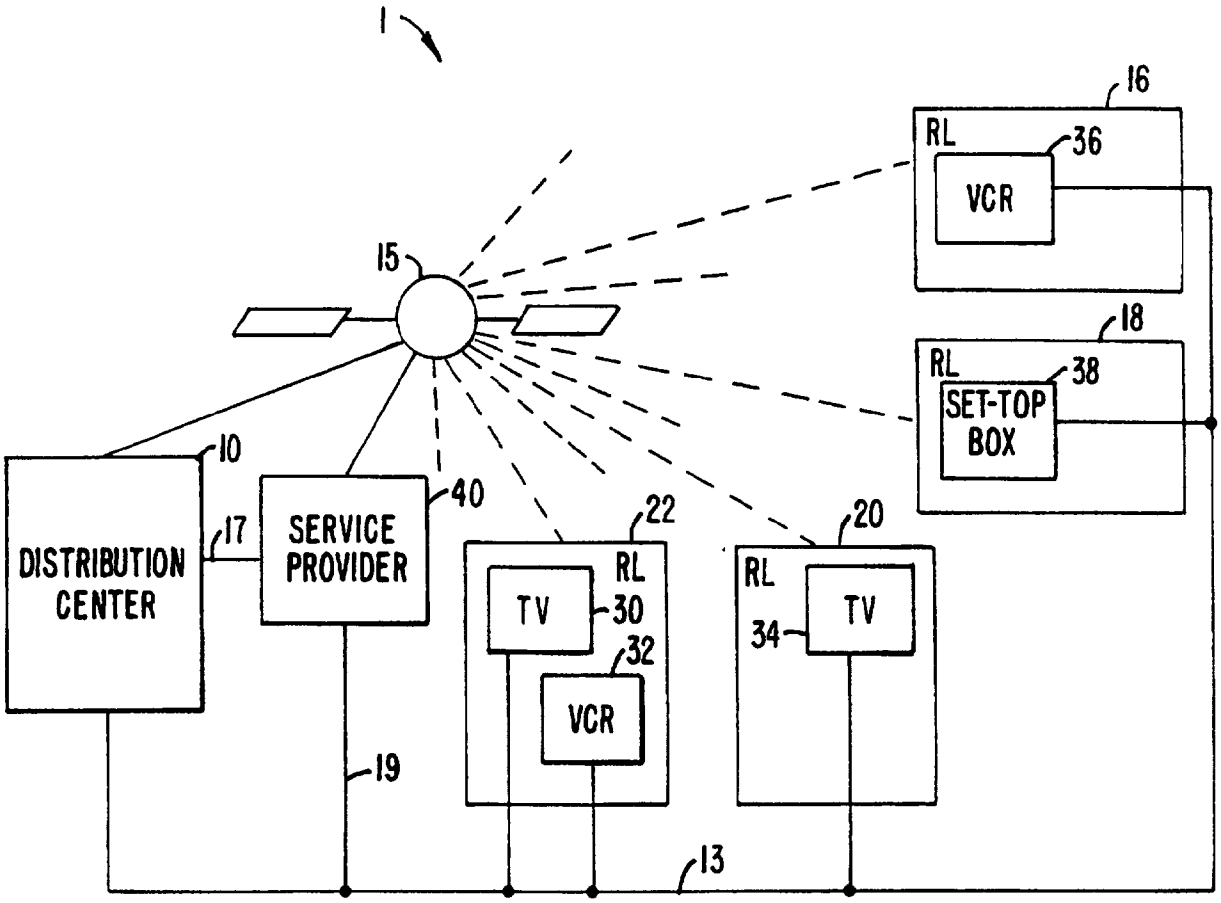

1
16
RL
36
VCR
15
18
RL
38
SET-TOP BOX
10
DISTRIBUTION CENTER
17
SERVICE PROVIDER
40
22
RL
TV
30
32
VCR
20
RL
34
TV
19
13

FIG. 1.

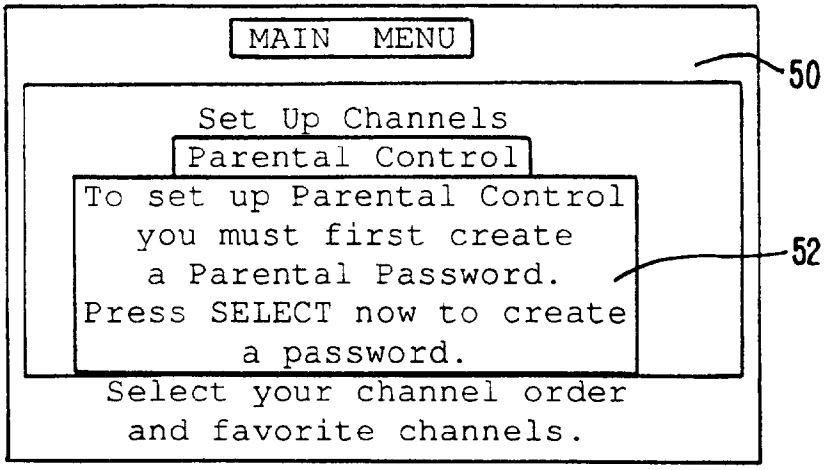


FIG. 2A.

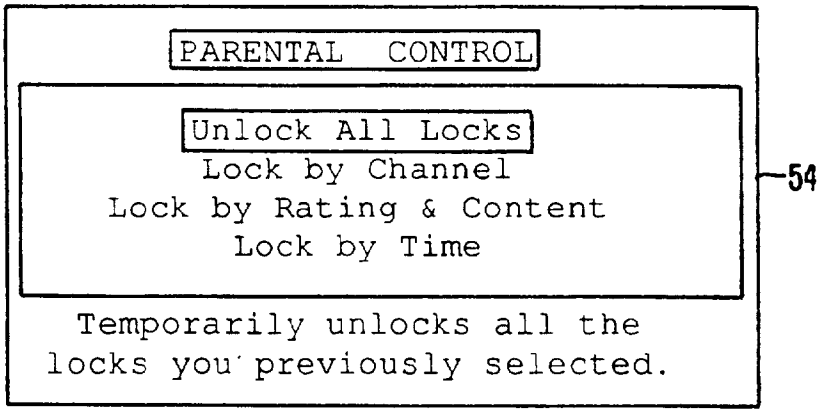


FIG. 2B.

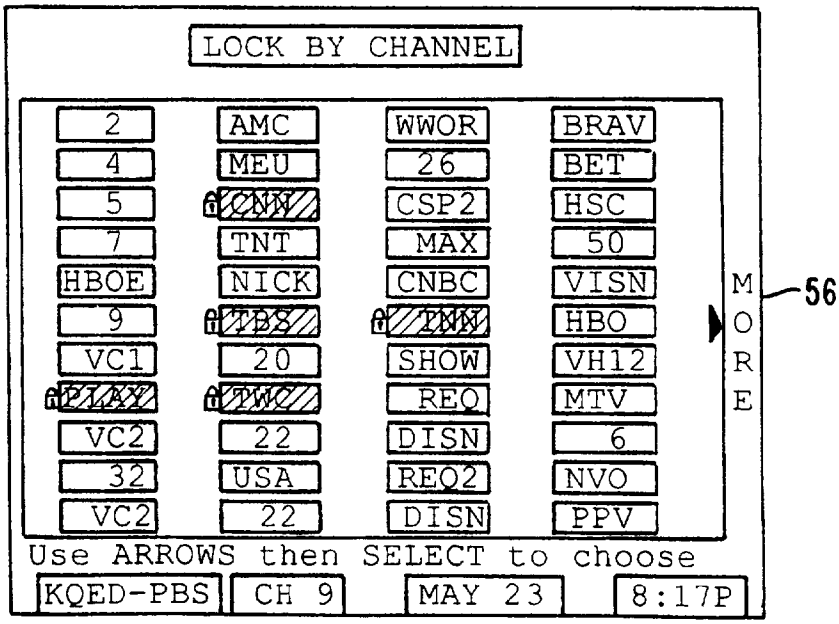


FIG. 2C.

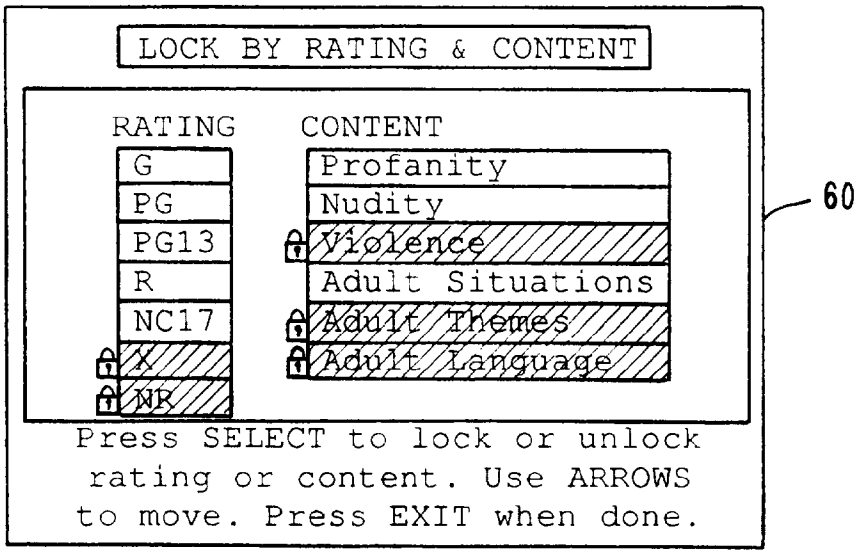

LOCK BY RATING & CONTENT
RATING
G
PG
PG13
R
NC17
X
NR
CONTENT
Profanity
Nudity
Violence
Adult Situations
Adult Themes
Adult Language
60
Press SELECT to lock or unlock rating or content. Use ARROWS to move. Press EXIT when done.

FIG. 2D.

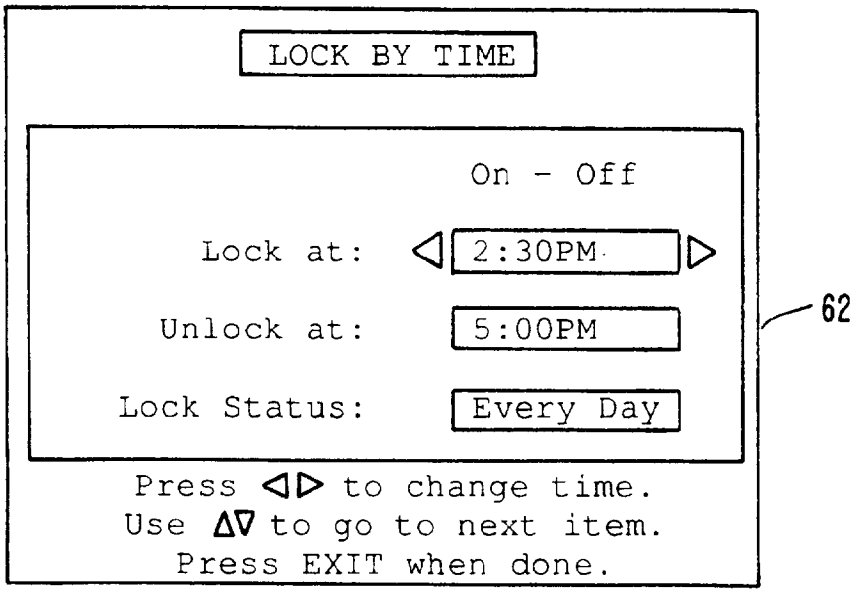

LOCK BY TIME
On - Off
Lock at:
2:30PM
Unlock at:
5:00PM
Lock Status:
Every Day
62
Press ◁▷ to change time.
Use △▽ to go to next item.
Press EXIT when done.

FIG. 2E.

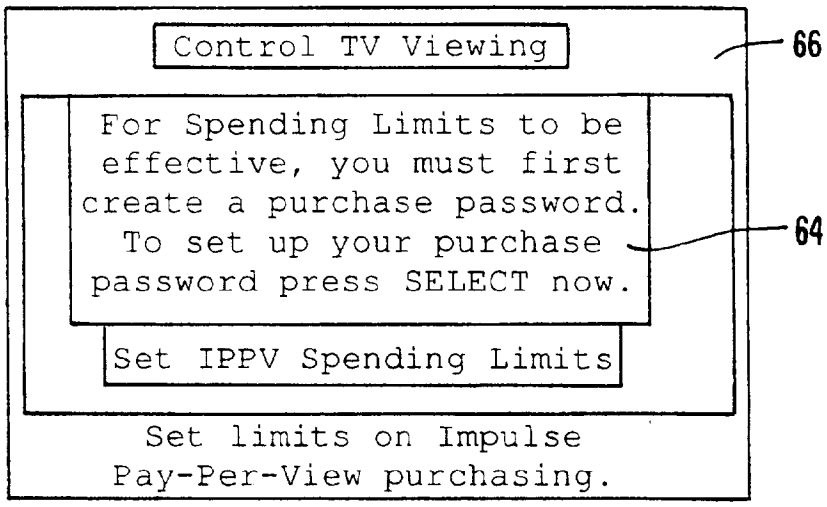


FIG. 2F.

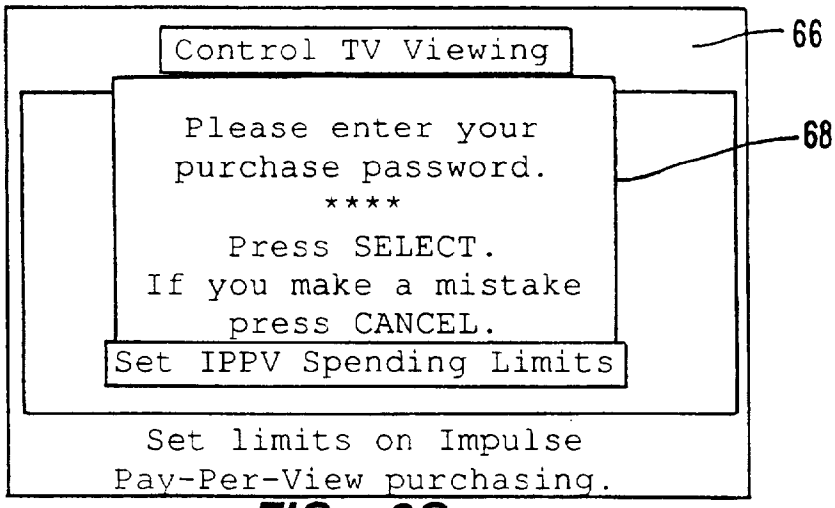


FIG. 2G.

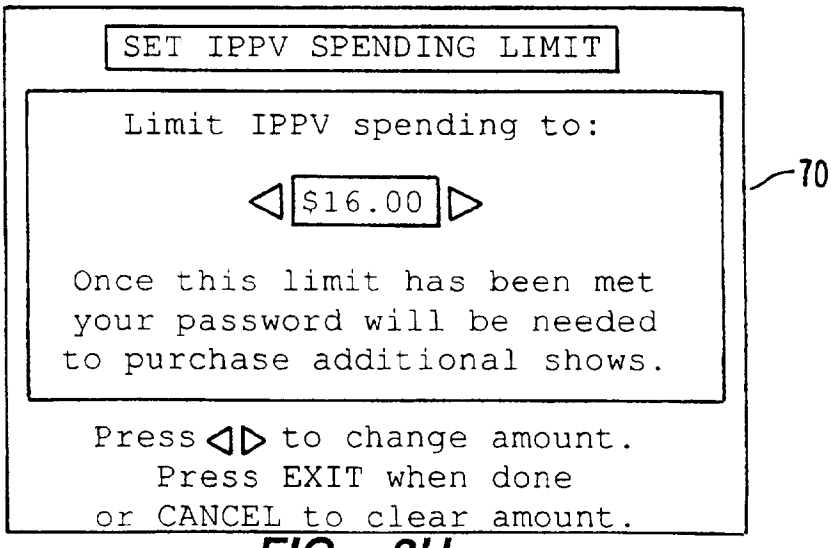


FIG. 2H.

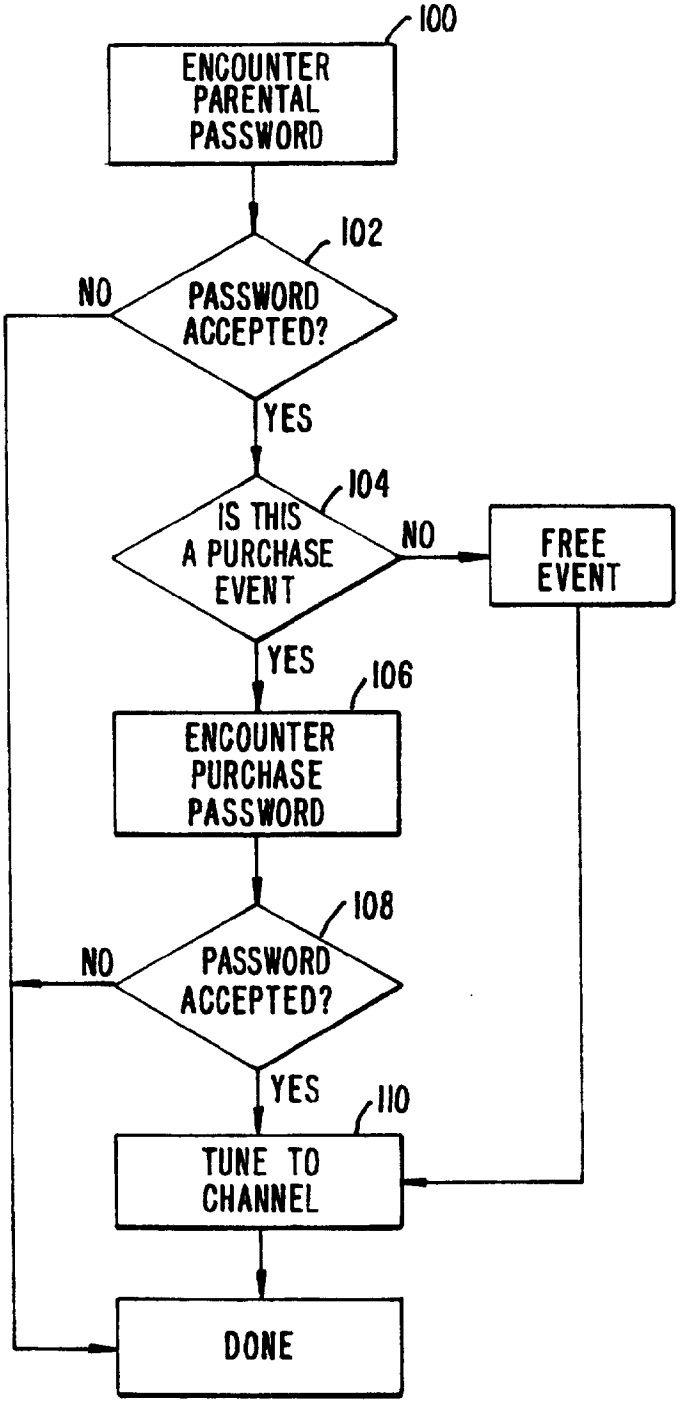

100
ENCOUNTER PARENTAL PASSWORD
102
PASSWORD ACCEPTED?
NO
YES
104
IS THIS A PURCHASE EVENT
NO
FREE EVENT
YES
106
ENCOUNTER PURCHASE PASSWORD
108
PASSWORD ACCEPTED?
NO
YES
110
TUNE TO CHANNEL
DONE

FIG. 3.

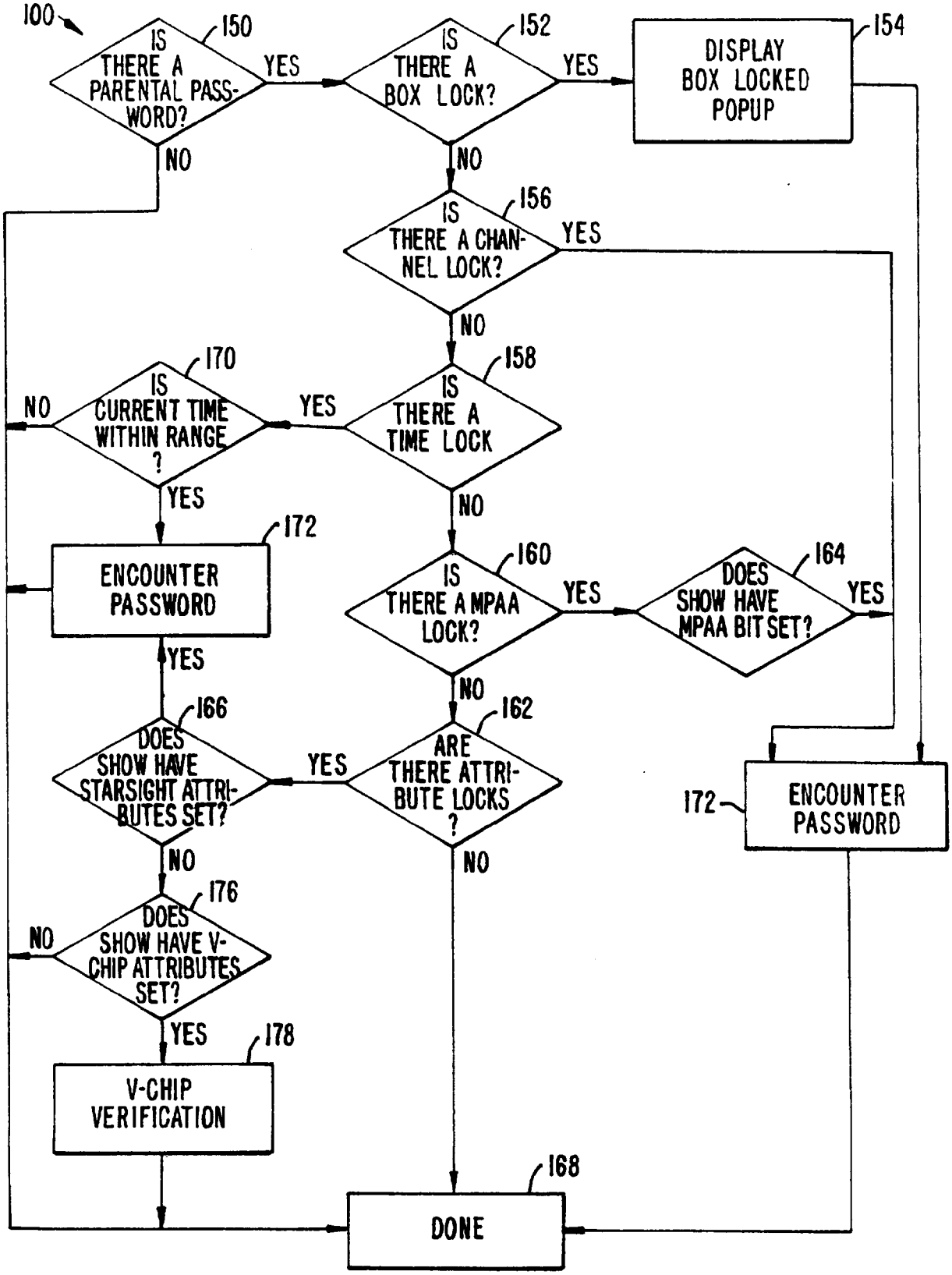

100
IS THERE A PARENTAL PASS-WORD?
150
YES
NO
IS THERE A BOX LOCK?
152
YES
NO
DISPLAY BOX LOCKED POPUP
154
IS THERE A CHAN-NEL LOCK?
156
YES
NO
IS THERE A TIME LOCK
158
YES
NO
IS CURRENT TIME WITHIN RANGE ?
170
NO
YES
ENCOUNTER PASSWORD
172
YES
IS THERE A MPAA LOCK?
160
YES
NO
DOES SHOW HAVE MPAA BIT SET?
164
YES
ARE THERE ATTRI-BUTE LOCKS ?
162
YES
NO
DOES SHOW HAVE STARSIGHT ATTRI-BUTES SET?
166
YES
NO
DOES SHOW HAVE V-CHIP ATTRIBUTES SET?
176
NO
YES
V-CHIP VERIFICATION
178
ENCOUNTER PASSWORD
172
DONE
168

FIG. 4.

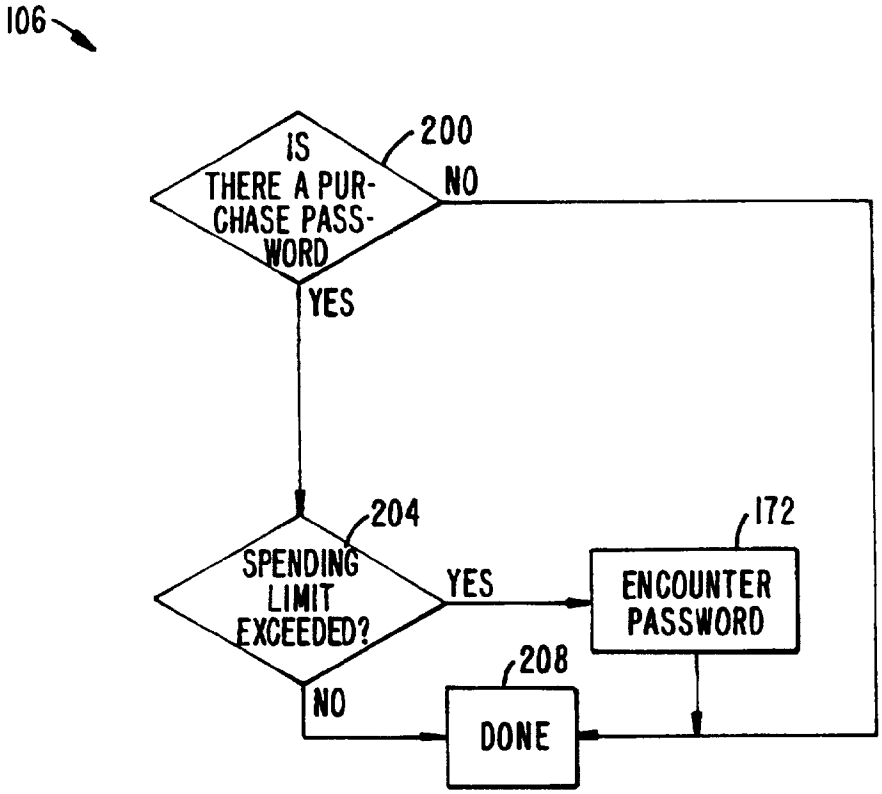

106
IS THERE A PURCHASE PASSWORD
200
NO
YES
204
SPENDING LIMIT EXCEEDED?
YES
172
ENCOUNTER PASSWORD
NO
208
DONE

FIG. 5.

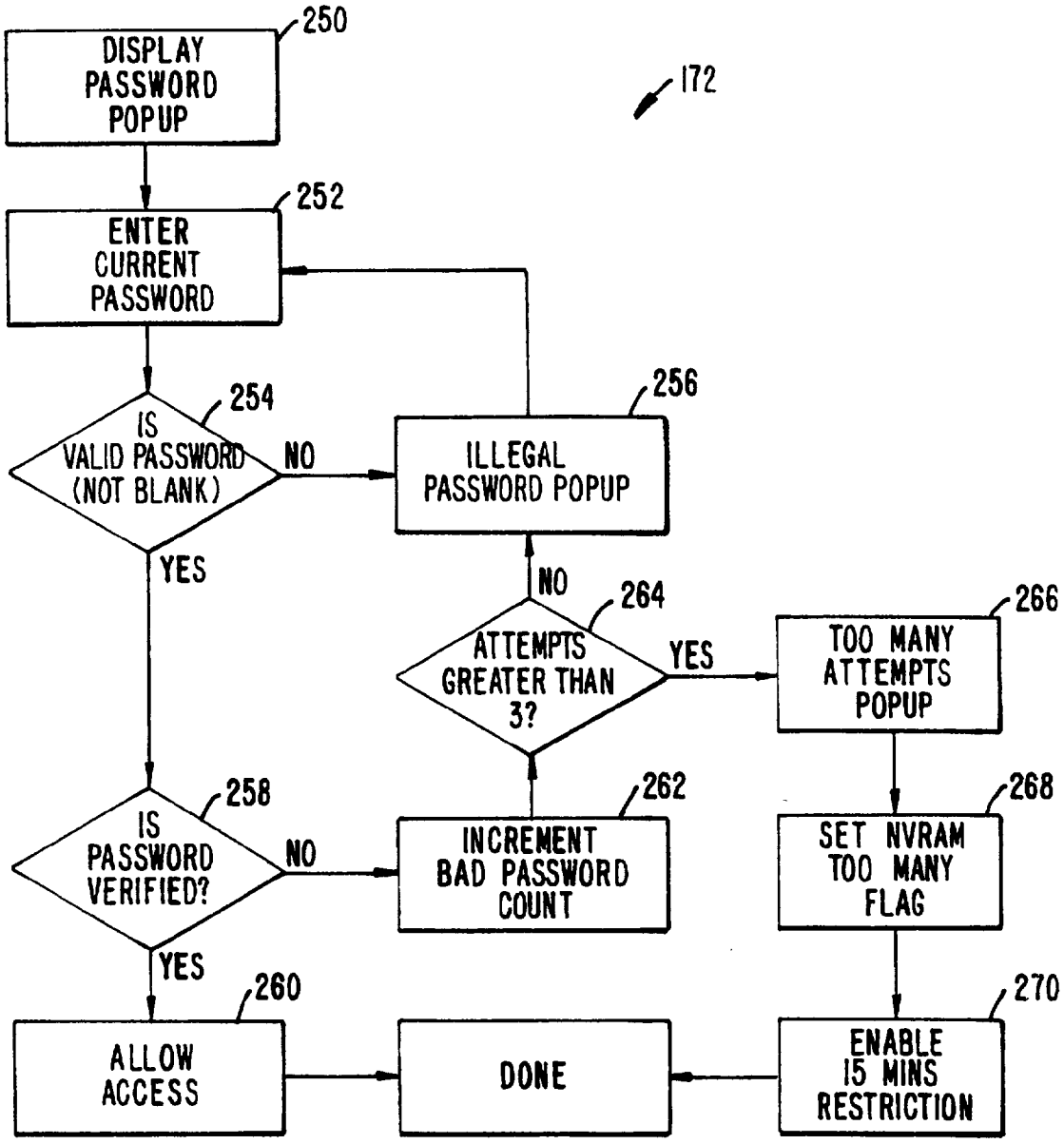

DISPLAY PASSWORD POPUP
250
172
ENTER CURRENT PASSWORD
252
IS VALID PASSWORD (NOT BLANK)
254
NO
ILLEGAL PASSWORD POPUP
256
YES
NO
ATTEMPTS GREATER THAN 3?
264
YES
TOO MANY ATTEMPTS POPUP
266
IS PASSWORD VERIFIED?
258
NO
INCREMENT BAD PASSWORD COUNT
262
SET NVRAM TOO MANY FLAG
268
YES
ALLOW ACCESS
260
DONE
ENABLE 15 MINS RESTRICTION
270

FIG. 6.

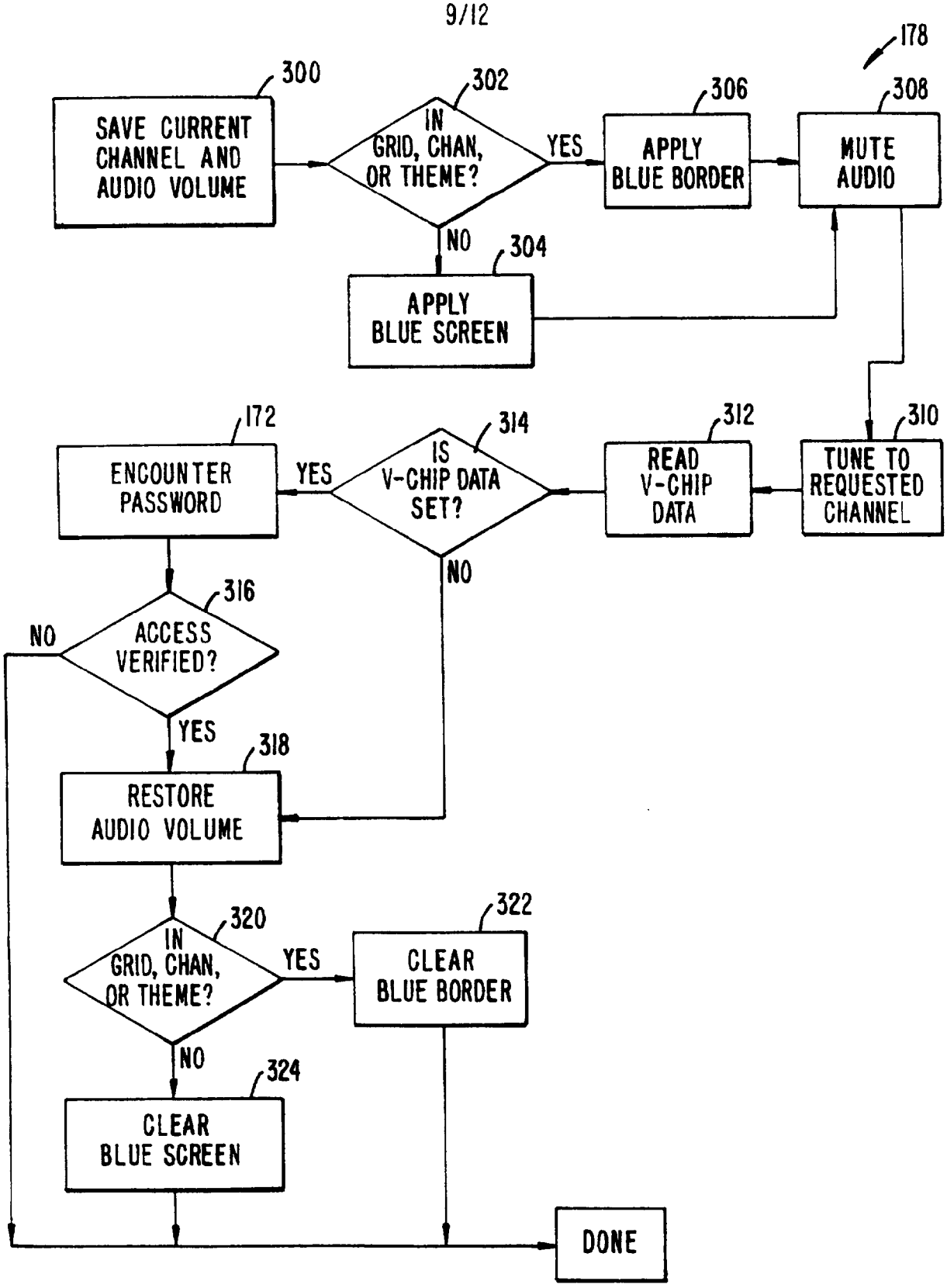

178
300
SAVE CURRENT CHANNEL AND AUDIO VOLUME
302
IN GRID, CHAN, OR THEME?
YES
306
APPLY BLUE BORDER
308
MUTE AUDIO
NO
304
APPLY BLUE SCREEN
172
ENCOUNTER PASSWORD
YES
314
IS V-CHIP DATA SET?
312
READ V-CHIP DATA
310
TUNE TO REQUESTED CHANNEL
NO
316
ACCESS VERIFIED?
NO
YES
318
RESTORE AUDIO VOLUME
320
IN GRID, CHAN, OR THEME?
YES
322
CLEAR BLUE BORDER
NO
324
CLEAR BLUE SCREEN
DONE

FIG. 7.

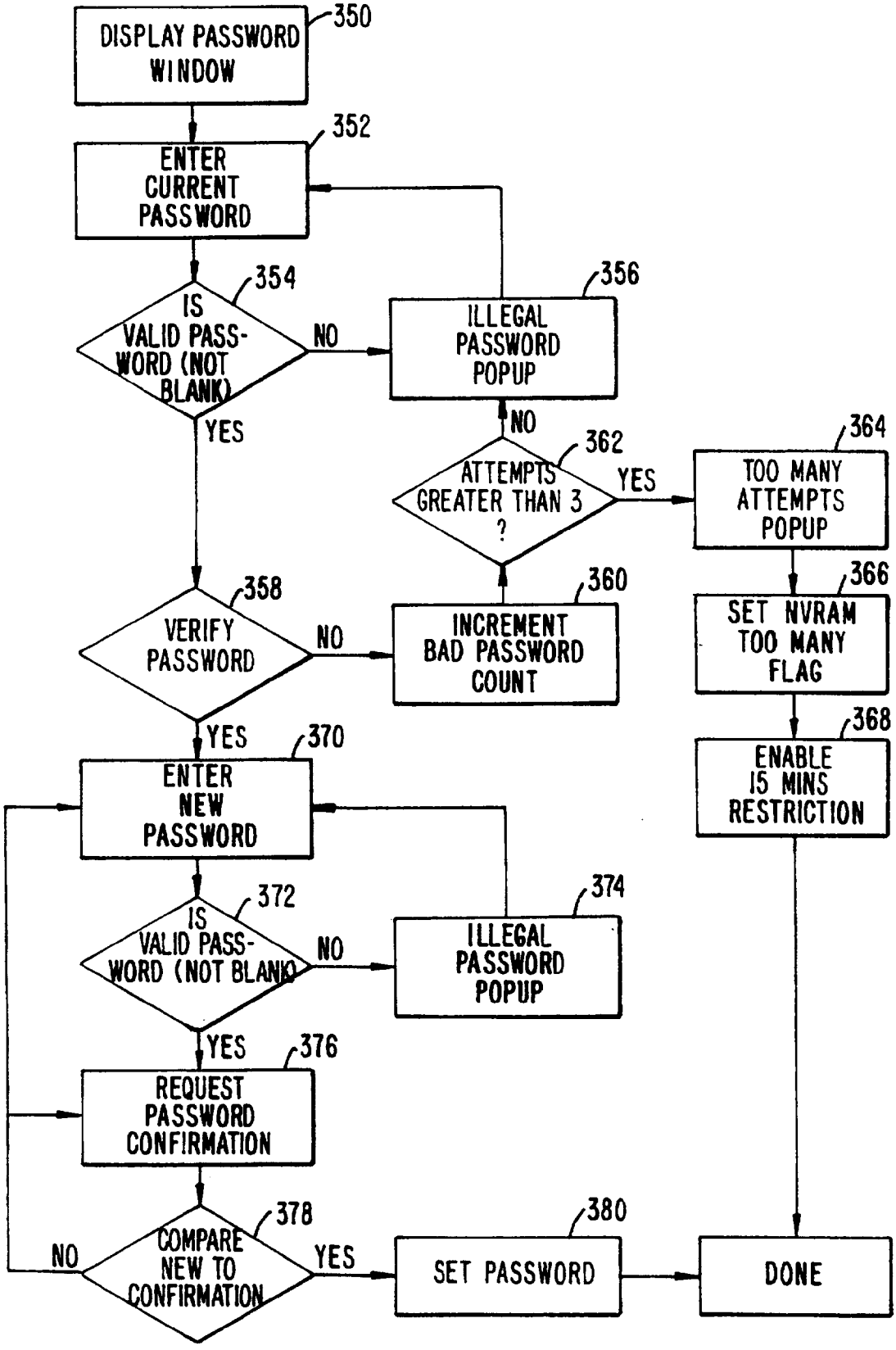

DISPLAY PASSWORD WINDOW
350
ENTER CURRENT PASSWORD
352
IS VALID PASS-WORD (NOT BLANK)
354
NO
YES
ILLEGAL PASSWORD POPUP
356
NO
ATTEMPTS GREATER THAN 3 ?
362
YES
TOO MANY ATTEMPTS POPUP
364
SET NVRAM TOO MANY FLAG
366
ENABLE 15 MINS RESTRICTION
368
VERIFY PASSWORD
358
NO
INCREMENT BAD PASSWORD COUNT
360
YES
ENTER NEW PASSWORD
370
IS VALID PASS-WORD (NOT BLANK)
372
NO
ILLEGAL PASSWORD POPUP
374
YES
REQUEST PASSWORD CONFIRMATION
376
COMPARE NEW TO CONFIRMATION
378
NO
YES
SET PASSWORD
380
DONE

FIG. 8.

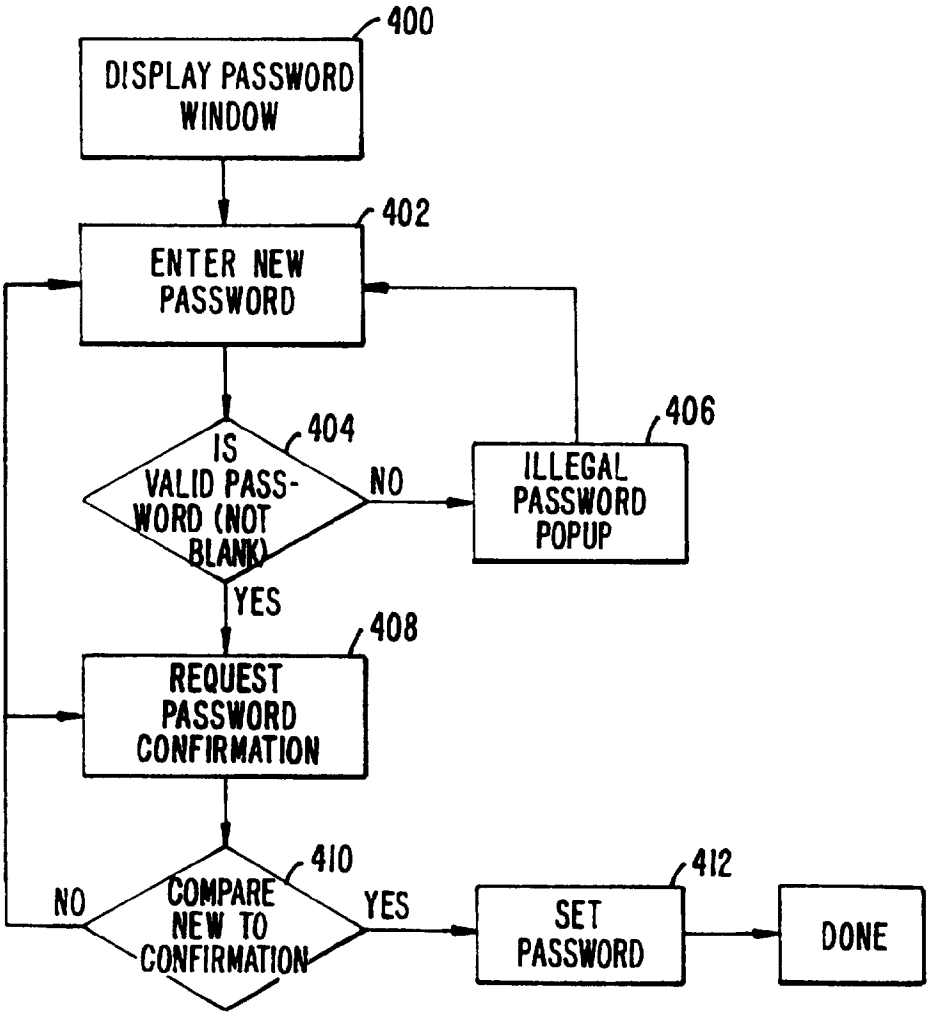

400
DISPLAY PASSWORD WINDOW
402
ENTER NEW PASSWORD
404
IS VALID PASS-WORD (NOT BLANK)
NO
406
ILLEGAL PASSWORD POPUP
YES
408
REQUEST PASSWORD CONFIRMATION
410
COMPARE NEW TO CONFIRMATION
NO
YES
412
SET PASSWORD
DONE

FIG. 9.

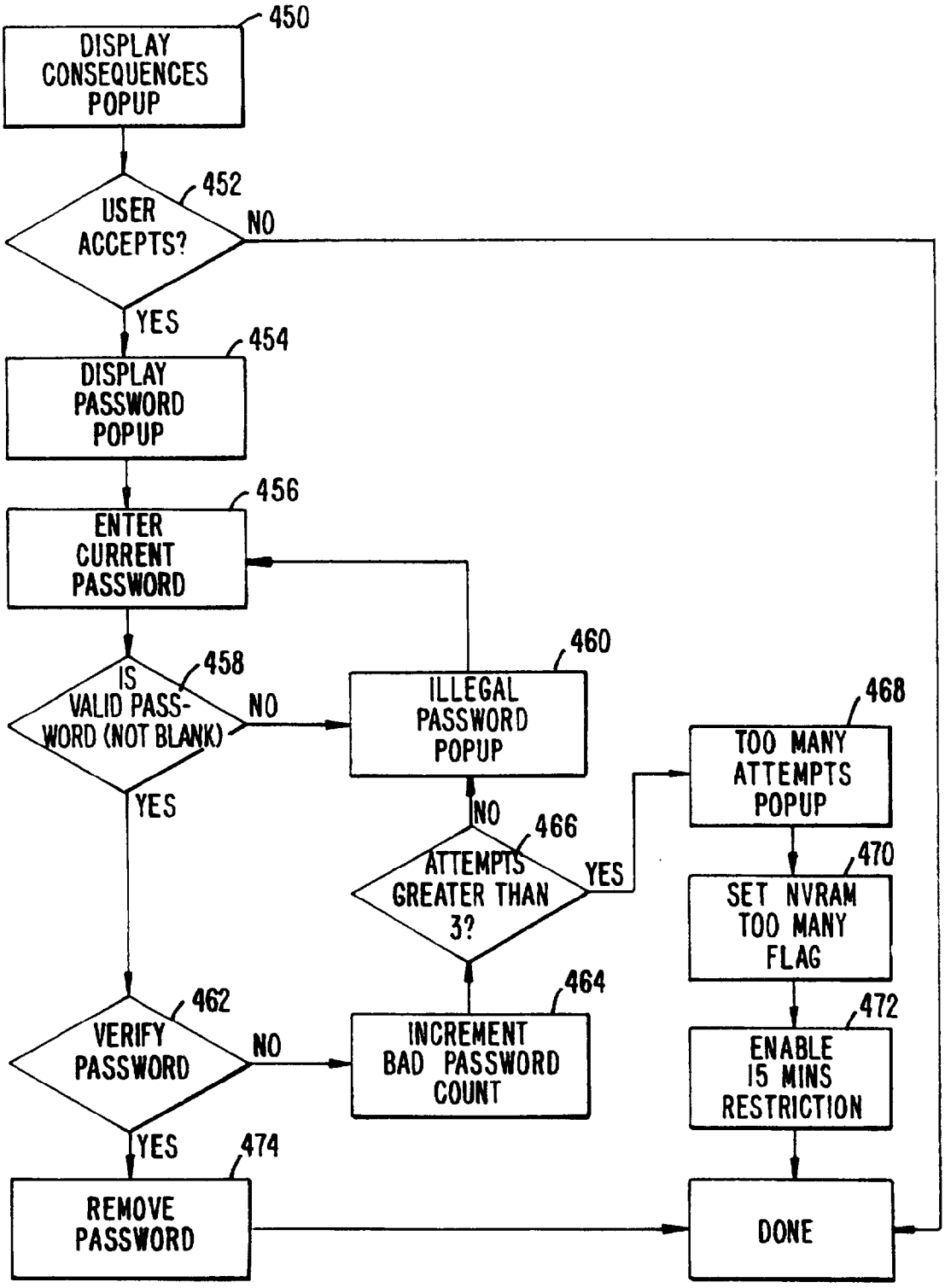

450
DISPLAY CONSEQUENCES POPUP
452
USER ACCEPTS?
NO
YES
454
DISPLAY PASSWORD POPUP
456
ENTER CURRENT PASSWORD
458
IS VALID PASS-WORD (NOT BLANK)
NO
YES
460
ILLEGAL PASSWORD POPUP
NO
466
ATTEMPTS GREATER THAN 3?
YES
468
TOO MANY ATTEMPTS POPUP
470
SET NVRAM TOO MANY FLAG
472
ENABLE 15 MINS RESTRICTION
462
VERIFY PASSWORD
NO
464
INCREMENT BAD PASSWORD COUNT
YES
474
REMOVE PASSWORD
DONE

FIG. 10.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US97/08833

A. CLASSIFICATION OF SUBJECT MATTER
IPC(6) :H04N 7/16, 7/10
US CL :348/7, 5.5, 906
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 348/7, 5.5, 906, 6, 10, 12, 13, 460, 473, 478; 455/5.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS
search terms: v(w)chip, televison, program schedule

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	US 5,583,576 A (PERLMAN ET AL) 10 December 1996, entire document.	1-6, 8, 9, 11,12-14, 19, 21, 22, 24, 25-27, 30
---		---
Y,P		7, 10, 20, 23
Y,P	US 5,557,724 A (SAMPAT ET AL) 17 September 1996, fig. 4, fig . 5.	7,20

[X] Further documents are listed in the continuation of Box C. [ ] See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be part of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search 22 JULY 1997	Date of mailing of the international search report 29 SEP 1997
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer LINUS H. LO Telephone No. (703) 305-4039

Form PCT/ISA/210 (second sheet)(July 1992)*

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US97/08833

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	US 5,585,866 A (MILLER ET AL) 17 DECEMBER 1996, col 22, lines 1-21, column 21 lines 17-67.	9, 22, 27, 28, 29, 30
----	column 24, lines 46-51.	----
Y,P		10,23
X	US 5,465,113 A (GILBOY) 07 NOVEMBER 1995, abstract.	1, 6, 9, 14, 19